

Infectious diseases can cause suffering and death to anyone, regardless of age, gender, lifestyle, ethnic background, and socioeconomic status; moreover, they impose an enormous financial burden on society. Because we do not know what new diseases will arise, we must always be prepared for the unexpected. The Centers for Disease Control and Prevention (CDC) has recently released a plan, *Preventing Emerging Infectious Diseases: A Strategy for the 21st Century*, which describes steps that we can take to move toward the realization of CDC's vision of a world in which all people join in a common effort to address today's emerging infectious diseases and prevent those of tomorrow.

The national emerging infectious disease plan encompasses nine specific categories of emerging infectious disease problems and particular groups of people who are most at risk: antimicrobial resistance; foodborne and waterborne diseases; vectorborne and zoonotic diseases; diseases transmitted through blood transfusions or blood products; chronic diseases caused by infectious agents; vaccine development and use; diseases of people with impaired immune systems; diseases of pregnant women and newborns; and diseases of travelers, immigrants, and refugees. This booklet focuses on the public health activities of the National Center for Infectious Diseases (NCID) that address diseases transmitted through blood transfusions or blood products.

Public health activities for the nine target areas are organized under four broad, intersecting goals: surveillance and response, applied research, infrastructure and training, and prevention and control.

The goal of surveillance and response is to detect, investigate, and monitor emerging pathogens, the diseases they cause, and the factors influencing their emergence, and to respond to problems as they are identified. The goal of applied research is to integrate laboratory science and epidemiology to better understand and optimize public health practices. The goal of infrastructure and training is to strengthen the underlying foundation of public health surveillance, research, and programs by supporting the planning, delivery, and evaluation of public health activities and practices. The fourth goal is to ensure prompt implementation of prevention and control strategies and enhance communication of public health information about emerging infections.

The Centers for Disease Control and Prevention Responds

The public health activities developed for the nine target areas by CDC's National Center for Infectious Diseases (NCID) build on existing efforts, are in the planning stages, or represent new efforts, all of which are described in individual booklets.



Improvements in donor screening, serologic testing, and transfusion practices have made the U.S. blood supply one of the safest in the world, despite its size and complexity. Every year, 12 million units of blood are donated by volunteers and used to treat 4 million people. An additional 13 million units of plasma are used to produce blood products such as immunoglobulins and clotting factors.

Because blood is a human tissue, it is a vehicle for transmission of infectious agents. During the 1970s and early 1980s, human immunodeficiency virus (HIV) was transmitted through transfusions of blood and clotting factors, and until the early 1990s, blood and blood products were contaminated with hepatitis C virus. Although research on artificial blood substitutes is underway, it is unlikely that such products will be available in the near future. Therefore, continued vigilance is required to safeguard our blood supply from recognized and emerging infectious disease threats.

Although the Food and Drug Administration (FDA) has regulatory responsibility for blood safety in the United States, CDC is responsible for detecting and assessing public health risks associated with blood and blood products. CDC and its partners are currently designing new strategies to prevent diseases from being transmitted by transfusions and ensure both the safety and availability of blood and blood products. Those strategies include devising and evaluating ways to screen donated blood; inactivating infectious agents in blood and blood products; finding new ways to ensure that people at risk of transmitting bloodborne infections do not donate blood; and identifying newly recognized pathogens that may be transmitted through blood transfusions.

NCID Activities for Addressing Diseases Transmitted Through Blood Transfusions or Blood Products

In collaboration with many private and public partners, NCID plans the following public health activities to specifically address the problem of diseases transmitted through blood transfusions or blood products.

Goal I: Surveillance and Response

- ◆ Develop a repository of blood specimens from linked donors and transfusion recipients. These specimens can be used to assess the risk of transmitting newly discovered infectious agents through the blood supply.
- ◆ Evaluate the possibility that prions (agents that cause “mad cow disease” and Creutzfeldt-Jakob disease [CJD]) can be transmitted by blood and blood products through surveillance and studies in transfusion recipients.

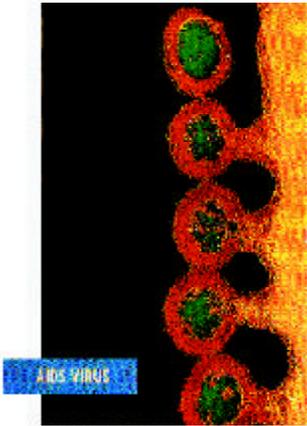


- ◆ Build on existing networks of international collaborating centers. For example, encourage centers in Africa, Asia, Latin America, and the Caribbean to monitor variant strains of HIV and detect new threats to the blood supply.
- ◆ Develop, implement, and evaluate a nationwide plan to identify recipients of transfusions who might have been infected with hepatitis C virus before effective blood tests became available. The plan will include testing and counseling transfusion recipients and other persons at risk for hepatitis C virus infection, as well as educational efforts directed at the public and health care professionals.
- ◆ Extend surveillance for transfusion-related infections to other groups of people in addition to those with hemophilia who receive frequent blood transfusions or blood products.



Goal II: Applied Research

- ◆ Evaluate and characterize the risk of transmission of emerging infectious agents through the blood supply, such as human herpesvirus 8, *Ehrlichia* species, uncharacterized hepatitis viruses, and *Trypanosoma cruzi*.



- ◆ Develop and assess strategies to improve the detection of infected blood from donors who are most likely to transmit bloodborne infections.
- ◆ Develop and evaluate techniques to detect and prevent bacterial contamination of blood and blood components, such as platelets.
- ◆ Work in partnership with academic and industrial researchers to develop and

assess methods for improving the sterilization of blood and blood products.

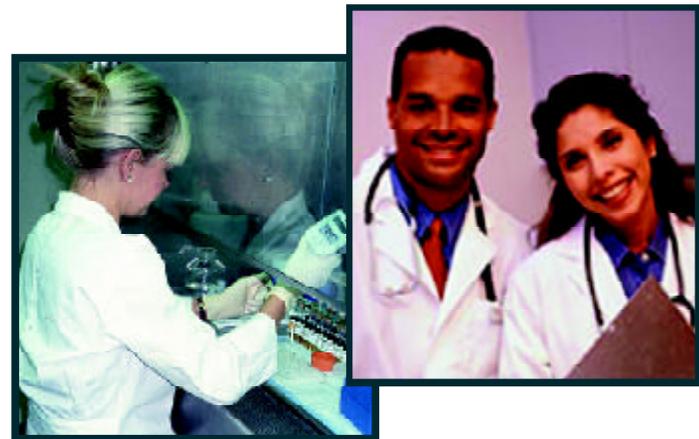
- ◆ Develop and evaluate diagnostic tests and confirmatory assays that can be used to screen donated blood for newly recognized bloodborne agents or agents that are known to be transmitted by transfusion but for which there are no approved tests to screen donors, for example, *Babesia* species or *Trypanosoma cruzi*.

Goal III: Infrastructure and Training

- ◆ Enhance current partnerships and build new ones with federal agencies, state and local health departments, blood and plasma collection agencies, consumer groups, professional and volunteer organizations, and industry.
- ◆ Sponsor and organize workshops on public health and scientific issues relevant to the safety of blood products.

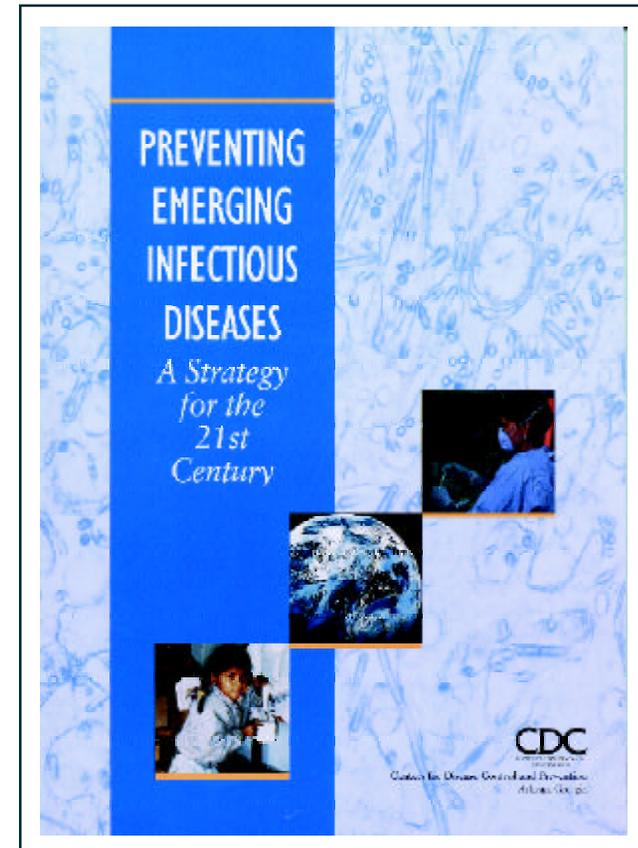
Goal IV: Prevention and Control

- ◆ Develop and evaluate interventions to discourage persons who may be at risk for infectious diseases from donating blood.
- ◆ Develop, implement, and evaluate immunization and health education programs to prevent transmission of bloodborne pathogens, including hepatitis B and hepatitis C, to people with clotting factor disorders.
- ◆ Collaborate with FDA and professional organizations to develop guidelines for counseling donors when new assays for screening blood samples and blood products become available.
- ◆ Evaluate the cost-effectiveness of new methods for screening blood and blood products for infectious agents.
- ◆ Work with public and private partners to implement sustainable programs in developing countries to improve the safety of blood transfusions worldwide.



Where To Find Additional Information

- ◆ Website for information on infectious disease topics from A to Z:
www.cdc.gov/health/diseases.htm
- ◆ Website for HIV/AIDS information:
www.cdc.gov/hiv
- ◆ Website for hepatitis information:
www.cdc.gov/hepatitis
- ◆ Website for information on bacterial contamination:
www.cdc.gov/ncidod/hip/bacon
- ◆ Website for information on hematologic diseases, including hemophilia:
www.cdc.gov/ncidod/dastlr/hematology
- ◆ Voice Fax for CDC (receive information on various diseases by voice message or printed fact sheets):
1-888-CDC-FAXX (1-888-232-3299)



Copies of this 75-page plan are available from
National Center for Infectious Diseases
Centers for Disease Control and Prevention
Mailstop C-14
1600 Clifton Road, NE
Atlanta, GA 30333
www.cdc.gov/ncidod

PREVENTING EMERGING INFECTIOUS DISEASES

*Addressing
the Problem of
Diseases Transmitted Through
Blood Transfusions
or Blood Products*



*A Strategy for the
21st Century*



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